Product Description

Program Number A2-3D1

Apple II Animation Package

(3D Graphics, Assembly Language Version)

Hardware Requirements

Apple II microcomputer and video monitor.

Memory Requirements

16K minimum for 3D to 2D transformer, small scenes, and small control programs.

24K minimum for larger scenes, control programs, and the DEVELOP program.

Product Format

Apple cassette (standard) or Apple disk (optional)

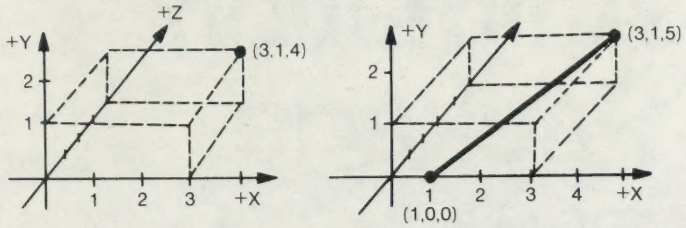
Documentation

32 page user's manual, 84 page technical manual.

Description

The A2-3D1 is a package of sophisticated yet easy-to-use programs for 3D and 2D animation on the Apple II microcomputer. The A2-3D1 is designed to accommodate the graphic needs of both new and experienced programmers. With it, you can:

a) View two- or three-dimensional scenes created in the standard XYZ coordinate system . . .



a) A point in 3D space

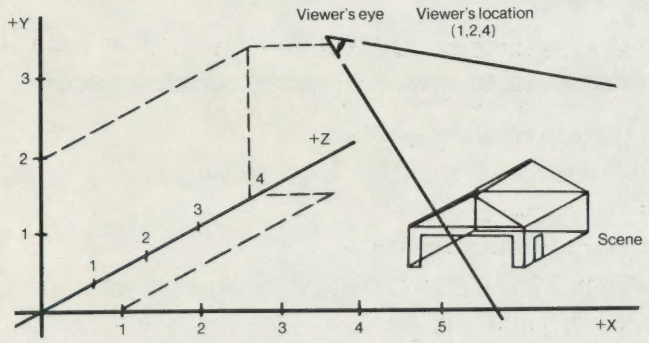
b) A line in 3D space

b) "Zoom" between wide angle and telephoto fields of view . . .

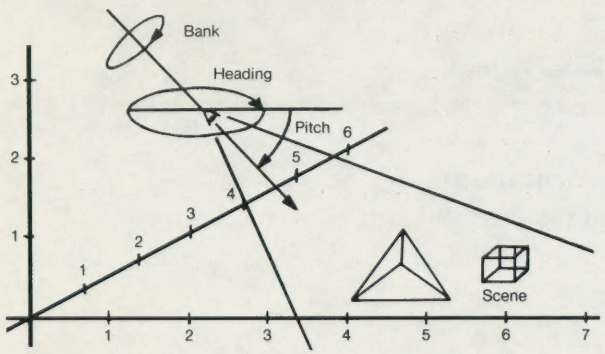
a) wide view AZR=32767

b) narrow view AZR=8192

c) Select a location in space and a direction of view.



Viewer's location in space.



Viewer's direction of view

Standard Features

The A2-3D1 program rates "high" in a number of respects: high resolution, high projection rate, high versatility, high control. And the extensive documentation makes it highly easy to use.

Resolution. You'll have 140 x 192 high resolution on the Apple II as your scenes appear on its screen.

Speed. Projection rates of 150 lines per second in the unclipped mode and 100 lines per second in the clipped mode are possible. A 42 millisecond screen erase subroutine is included in the package. A 20-line drawing will be presented at about 5 frames per second in the unclipped mode. If you are doing complex calculations of location and viewing angle, then the program speed will be reduced accordingly.

Versatility. You may specify your own scenes consisting of points and lines by giving XYZ coordinates of points and line end points. Coordinate values within a ±32767 unit range may be entered and stored. Viewing location (XYZ) may be specified within a ±32767 range, and you have full-circle viewing freedom of pitch, bank, and heading. A variable field of view feature lets you adjust your field of view and "zoom in" on objects in a camera-like fashion.

Control. A set of control programs is provided to give you unlimited utility in your educational, scientific, and game applications. These programs help you to create scenes and allow you to move dynamically through 3D space as follows:

You receive five sample data bases to view during familiarization. After familiarization, you may enter your own data bases as the "data base development program" requests. You may view your creations from different angles at any time during the development, and a "view finder program" helps find scenes as you move freely in 3D space. Scenes can be saved on cassette or disk. Data base relocation instructions let you move data bases in memory and thereby eliminate scene re-entry because of system or program change.

The movement program examples included allow you to change your location and viewing direction dynamically. Your scene will be viewed as you move through 3D space. A special subroutine is included that allows you to orbit your scene.

Utility. Two manuals which are written at different technical levels give all Apple users a quick understanding of access and uses from both assembly language and BASIC language levels.

The **Load and Go Manual** guides you through an orientation session with the A2-3D1 program. Load the 3D-2D transformer, load the DEVELOP program, and view the scene waiting for you. The manual will

show you how to change location and direction of view one step at a time and dynamically.

The load and go manual will also guide you through data base development by discussing how to create and enter your own data bases.

The **Technical Manual**, for advanced applications, describes the 3D-2D transformer algorithm in depth. Patchpoints and methods for hardware multiply, data input, and data output are described also, as well as special features of the package.

We recommend that new programmers learn the following BASIC statements:

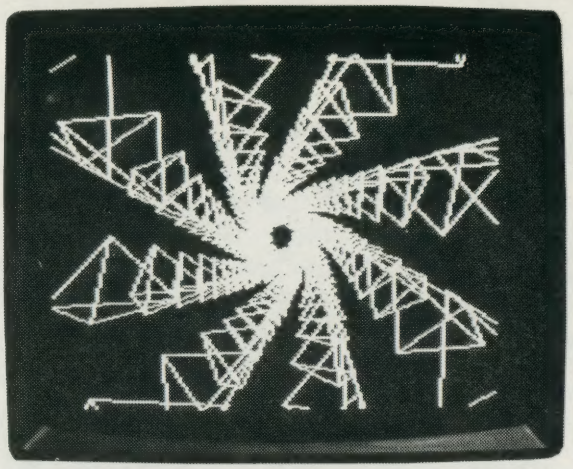
=, CALL, FOR - NEXT, GOSUB, GOTO, IF - THEN, POKE.

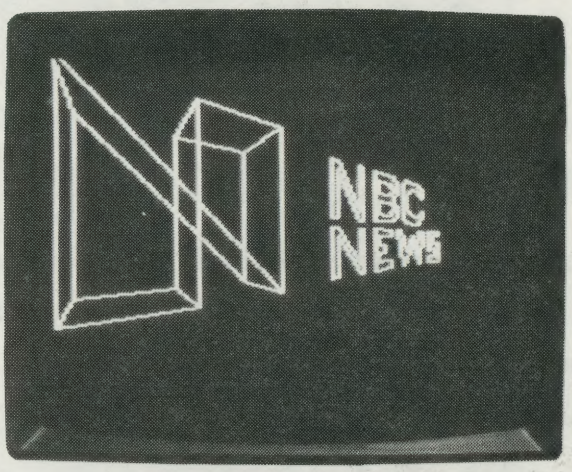
Summary of Commands

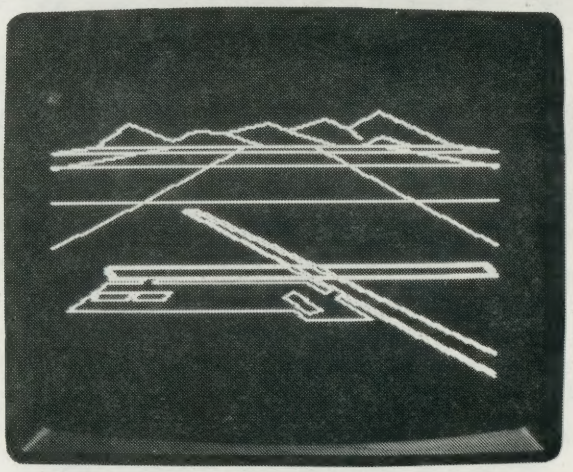
Plot 2D Point
Draw 2D Line from Point 1 to 2
Viewer's XYZ, PBH
Define 3D Point
Define 3D Start Point
Define 3D Continue Point
Define 3D Ray
Clipper Control Switch
Display Screen Select
Write Screen Select
Erase Screen
Interpretive Jump
Set Line Drawing Mode
Turn On Output Array Generation
Screen Size Selection
Field of View Selection
Easy Initialize
No Operation

Special Features

- An array generating feature lets you generate an output array of line start and end points instead of plotting on the Apple screen. This array will let you use the program with future graphic output devices.
- A "zero page restore" feature leaves all of your zero page variables intact after subroutine exit.
- The page control feature allows selective page erase, display, and draw for ping-ponging between screens. This permits smooth animation.
- The selective erase feature allows movement of objects without erasing the full screen.
- The A2-3D1 is given in two different memory locations (2048 or 24576 decimal) for future use with low lying languages or other non-relocatable programs.







Shown above are three examples of the kinds of graphics possible with the SubLOGIC A2-3D1 program. Such scenes can be viewed from any angle and any distance, and even orbited.

A special demonstration program is included in the A2-3D1 package.

Ordering Information

See your dealer or order directly from subLOGIC. The package price with cassette is $45. Add $10 for disk option. Both media are usable with the Apple Plus.

If you have a computer system other than an Apple II, write or call for our complete catalog of graphic software and hardware.

Shipping: US and Canada add $2.50 for first class mail, $1.75 for UPS, $3.25 for COD (UPS) orders. Foreign add $10.00 ($11.50 from Australia) for airmail. Illinois residents add 5% sales tax.

Mastercard and VISA accepted.

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The engineering and graphics experts opening a new era in computer simulation.

Also Available . . .

SubLOGIC offers Load and Go 3D Graphics in BASIC for Apple II with Applesoft ROM (16K) or Applesoft cassette version (32K). The slow running BASIC is often preferred by physicists, astronomers, and other scientists who need floating point accuracy of output.

The package contains a 60-page BASIC 3D graphics manual and a 22-page load and go manual. The BASIC version generates its own trig functions; the listing contained in the BASIC 3D graphics manual may therefore be adapted to almost all computers ranging from a Level II TRS-80 to an IBM 370.

$30 (disk option $10 extra)